

REMARKS

Claims 1-26 are pending in this application. Claims 1-12, 15-18, 20, 21 and 23-25 have been withdrawn from consideration. By this Amendment, claims 13 and 26 are amended and Figs. 1 and 2 are amended to remove the "prior art" description. Reconsideration in view of the above amendments and following remarks is respectfully requested.

It is greatly appreciated that the Office Action indicates that claims 19 and 22 contain allowable subject matter.

The Office Action objects to the Abstract. The Abstract is replaced with the attached substitute Abstract. Thus, withdrawal of the objection to the Abstract is respectfully requested.

The Office Action rejects claims 13, 14, 19, 22 and 26 under 35 U.S.C. §112, second paragraph. Claims 13 and 26 are amended to obviate the rejection. Accordingly, withdrawal of the rejection is respectfully requested.

The Office Action rejects claims 13 and 26 under 35 U.S.C. §102(e) as being anticipated by Hasegawa (U.S. Patent No. 6,700,756); and claim 14 is rejected under 35 U.S.C. §103(a) over Hasegawa, and further in view of Applicants' alleged admitted prior art. The rejections are respectfully traversed.

In particular, neither Hasegawa nor Applicants' alleged admitted prior art disclose or suggest a method of manufacturing a spin valve, including at least, after a completion of a film making process for forming a previous film of two films which are selected from a first ferromagnetic film, electrically conductive film and second ferromagnetic film and are to be formed successively, but before initiation of a film making process for forming a succeeding film of the two films, a step of decreasing an anisotropic magnetic field of the spin valve film by interrupting a film making process is introduced, as recited in independent claim 13, and similarly recited in independent claim 26.

Specifically, Hasegawa discloses a method of manufacturing a spin valve film by: (1) forming an undercoat film 31 on a substrate; (2) forming an antiferromagnetic film 22 on the undercoat film 31; (3) forming a first ferromagnetic film 23 serving as a pinned layer on the antiferromagnetic film; (4) forming an electrically conductive film 24 on the first ferromagnetic film 23; and (5) forming a second ferromagnetic film 25 serving as a free layer on the electrically conductive film 24. However, Hasegawa does not teach an introduction of an interruption during the process of making the spin valve film. Hasegawa discloses that the layers ranging from the antiferromagnetic layer 22 to the free magnetic layer 25 are formed, and then heat-treated (annealed) in a magnetic field to cause an exchange anisotropic magnetic field in the interface between the pinned magnetic layer 23 and the antiferromagnetic layer 22. See col. 3, lines 33-41. Thus, in Hasegawa, the annealing is performed after forming the spin valve film.

In contrast to the claimed invention, neither Hasegawa nor Applicants' alleged admitted prior art disclose or suggest a method of manufacturing a spin valve, including at least, after a completion of a film making process for forming a previous film of two films which are selected from a first ferromagnetic film, electrically conductive film and second ferromagnetic film and are to be formed successively, but before initiation of a film making process for forming a succeeding film of the two films, a step of decreasing an anisotropic magnetic field of the spin valve film by interrupting a film making process is introduced.

The Office Action alleges that Hasegawa teaches that Joule heat generated by the sensing current decreases the exchange anisotropic magnetic field. However, this exchange anisotropic magnetic field is not related to the anisotropic magnetic field according to the claimed invention. For example, the anisotropic magnetic field disclosed in Hasegawa is the exchange anisotropic magnetic field in the interface between the free layer 25 and the bias layer 26, or the interface between the antiferromagnetic layer 2 and the pinned layer 3. Thus,

the anisotropic magnetic field of the spin valve film in Hasegawa is not an anisotropic magnetic field generated in the free layer and magnetically influenced by a pinned layer.

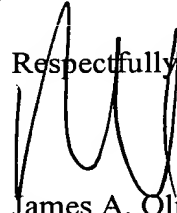
Accordingly, any resulting device in Hasegawa would have been susceptible to shifting of a direction of magnetization of the pinned layer which is formed prior to the annealing, thus degrading the property of the spin valve film. Because Hasegawa fails to disclose these features, Hasegawa fails to disclose each and every feature as the claimed invention.

Furthermore, because it would not have been obvious to combine Hasegawa with Applicants' alleged admitted prior art, it would not have been obvious to modify Hasegawa to arrive at the claimed invention. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. §102(e) and 35 U.S.C. §103(a) be withdrawn.

In view of the foregoing, this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 13, 14, 19, 22 and 26 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:RSE/al

Attachments:

Abstract

Replacement Sheet

Date: September 14, 2004

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**DEPOSIT ACCOUNT USE
AUTHORIZATION**

Please grant any extension
necessary for entry;

Charge any fee due to our
Deposit Account No. 15-0461

Amendments to the Drawings:

The attached replacement drawing sheet makes changes to Figs. 1 and 2 and replaces the original sheet with Figs. 1 and 2.

Attachment: Replacement Sheet